

# Notice of Allowability

Application No.

09/881,489

Examiner

Dah-Wei D. Yuan

Applicant(s)

BECKMANN ET AL.

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/14/2004.
2. ☒ The allowed claim(s) is/are 1,4-6,8,15-20 and 32.
3. ☒ The drawings filed on 05 September 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                    |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |

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**APPARATUS AND METHOD FOR RAPIDLY INCREASING POWER OUTPUT  
FROM A DIRECT OXIDATION FUEL CELL**

Examiner: Yuan

S.N. 09/881,489

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May 7, 2004

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 14, 2004 has been entered. Claim 2 was cancelled. Claims 1,4-6,8,18,20,32 were amended.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on October 14, 2003.

***Examiner's Amendment***

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

4. This application is in condition for allowance except for the presence of claims 21 to 31 non-elected without traverse. Accordingly, claims 21-31 are cancelled.

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### ***Claim Rejections***

5. The claim rejections under 35 U.S.C. 102(e) as anticipated by Surampudi et al. on claim 1,19 are withdrawn because the independent claim 1 has been amended. The claim rejections under 35 U.S.C. 102(e) as anticipated by Surampudi et al. on claim 32 are withdrawn because the independent claim 32 has been amended. The claim rejections under 35 U.S.C. 103(a) as obvious over Surampudi et al. and Sugita et al. on claims 3,4 are withdrawn because claim 3 has been canceled and claim 4 has been amended. The claim rejections under 35 U.S.C. 103(a) as obvious over Surampudi et al. and Sugita et al. on claims 6,7 have been withdrawn because the independent claim 6 has been amended. The claim rejections under 35 U.S.C. 103(a) as obvious over Surampudi et al. and Sugita et al. on claims 15-17 have been withdrawn because the independent claim 1 has been amended.

### ***Reasons for Allowance***

6. Claims 1,4-6,8,15-20,32 are allowed. The invention of independent claims 1,32 recites a direct methanol fuel cell system comprising a direct methanol fuel cell, wherein a conduit for delivering a first fuel mixture to an anode of the fuel cell, a second conduit bypassing at least a portion of said first fuel mixture conduit and being coupled to a source of fuel and to one or more valves, and a controller operating to actuate one or more of valves to allow a more concentrated fuel to be delivered to the anode in response to a change in operating condition of the fuel cell. The closest prior arts of record, Surampudi et al. and Sugita et al., do not teach or suggest the use of a separate conduit bypassing at least a portion of the first fuel mixture conduit in response to a

change in operating condition of the fuel cell. Instead, Surampudi et al. teach the use of a concentration sensor to determine the concentration of methanol in the circulation tank to be used in the fuel cell. The invention of independent claim 4 recites a diffusion layer for use in a direct oxidation fuel cell comprising a layer of material having a first surface and a second surface and one or more apertures extending from the first surface to the second surface, wherein a source of concentrated fuel is bypassed a portion of a first fuel mixture conduit and a more concentrated fuel is delivered via the apertures. The closest prior arts of record, Surampudi et al. and Sugita et al., do not teach or suggest a diffusion layer having a separate conduit bypassing at least a portion of the first fuel mixture conduit in response to a change in operating condition of the fuel cell. The invention of independent claims 5,8 recites a diffusion layer for use in a direct oxidation fuel cell comprising a layer of material having a first surface and a second surface and one or more apertures extending from the first surface to the second surface, wherein one or more apertures are lined with a material which is substantially impermeable to the fuel, thereby inhibiting the fuel from migrating laterally into the diffusion layer. The closest prior arts of record, Surampudi et al. and Sugita et al., do not teach or suggest the apertures are lined with a substantially impermeable material to prevent fuel from migrating laterally. The invention of independent claim 6 recites a membrane electrode assembly for use in a direct oxidation fuel cell comprising a protonically conductive membrane, anode and cathode diffusion layers, and one or more apertures for allowing a more concentrated fuel to bypass the diffusion layer, wherein one or more apertures are connected by one or more conduits and at least a portion of a first fuel mixture conduit is bypassed. The closest prior arts of record, Surampudi et al. and Sugita et al.,

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do not teach or suggest a membrane electrode assembly having one or more valves connected to the conduits that at least a portion of the first fuel mixture conduit is bypassed. The invention of independent claims 18,20 recites a direct methanol fuel cell system comprising a direct methanol fuel cell including an anode, a cathode and a protonically-conductive membrane, a source of fuel, a conduit coupled to the fuel source and to one or more valves and a controller, where the conduit extends directly to the protonically-conductive membrane in the membrane electrode assembly. The closest prior arts of record, Surampudi et al. and Sugita et al., do not teach or suggest such features in a direct methanol fuel cell.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan  
May 7, 2004

A handwritten signature in cursive script, appearing to read "Dahwei", followed by a long horizontal flourish.